

REMARKS/ARGUMENTS

Reconsideration is requested in view of the following remarks. Paragraph [0019] of the specification has been editorially revised to correct a typographical error. Claims 1-25 have been canceled as requested by the Examiner. Claim 26 has been editorially revised. Support for the claim revision can be found in paragraphs [0016]-[0017] of the specification and Figures 2 and 4. Claims 26-31 remain under consideration in the present application.

Claim Rejections – 35 USC §112

Claims 26-31 are rejected under 35 U.S.C. §112, first paragraph, because the term “complex” is asserted to not appear in the specification. Applicant respectfully traverses this rejection since the term “complex” does appear more than once in paragraph [0016] of the specification. Particularly, the recited “complex anisotropic portion” appears in paragraph [0016] as referenced to Figure 4. Regardless, the term “complex” has been deleted from claim 26 as unnecessary for patentability over the cited art. This rejection should be withdrawn.

Claims 26-31 are rejected under 35 U.S.C. §112, second paragraph, because the terms “and” and “together” are indefinite as they relate to “said complex anisotropic portions” and “said three-dimensional pattern”. Applicant respectfully traverses this rejection. Claim 26 has been editorially revised and no longer links “said complex anisotropic portions” and “said three-dimensional pattern” together via the terms “and” and “together”. This rejection is therefore overcome and the rejection should be withdrawn.

Claims 26-31 are further rejected under 35 U.S.C. §112, second paragraph, because the term “complex” is unclear. Applicant respectfully traverses this rejection. The term “complex portion 40” is clearly described in paragraph [0016] of the specification with reference to Figure 4. Regardless, the term “complex” has been deleted from claim 26 as unnecessary for patentability over the cited art. This rejection should be withdrawn.

Claims 26-31 are further rejected under 35 U.S.C. §112, second paragraph, because the language “configured via at least one of a plurality of optical properties” is unclear. Applicant respectfully traverses this rejection. Claim 26 has been revised to now recite “at least one optical property selected from a plurality of optical properties”. Paragraph [0017] of the specification clearly identifies and describes a plurality of optical properties that may be modified to generate the three-dimensional patterns 44 with anisotropic properties at the focal spot 36. This rejection is therefore overcome and should be withdrawn.

Claim Rejections – 35 USC §103

Claims 26-31 stand rejected under 35 U.S.C. §103(a) as unpatentable over Corbeil et al. (US Pub. No. 2004/0262526 A1) in view of Mir et al. (US 5,064,684) or Borelli et al. (US 6,796,148). Applicant respectfully traverses this rejection.

Claim 26 is directed to an anisotropic scintillator for use in an imaging system comprising:

a scintillator element comprised of an isotropic scintillator material having a first optical property;

a three-dimensional pattern formed in said scintillator element utilizing a pulse laser, said pulse laser altering said first optical property at a plurality of discrete locations in said scintillator element such that said three-dimensional pattern is comprised of anisotropic portions and such that said anisotropic portions form localized channel regions in said scintillator element;

wherein said three-dimensional pattern is configured to control the spread of photons to achieve desired signal sharing among the plurality of regions having borders defined by the plurality of discrete locations; and

further wherein said anisotropic portions are comprised of at least one optical property selected from a plurality of optical properties to preserve spatial information allowing reliable centroid determination within the anisotropic scintillator.

The rejection asserts that “It is believed that the sharing of photons - i.e., the instant optical sharing – occurs within the optical boundaries of the segments in Corbeil et al. to the same extent as it occurs in the instant application, and that is what allows the scintillator to decode or determine where the photons originated therefrom.” This assertion is not correct since the invention of Corbeil et al. requires optical boundaries created solely from micro-voids that are not anisotropic portions as required by claim 26.

While the invention of Corbeil et al. achieves decoding by using isotropic micro-voids between a plurality of regions, the claimed invention preserves spatial information through desired signal sharing among the plurality of regions via anisotropic portions. Micro-voids are by definition isotropic since micro-voids exhibit properties with the same values when measured along axes in all directions. Although micro-voids can be employed to alter anisotropic properties of a scintillator, the micro-voids in themselves are not anisotropic. The micro-voids of Corbeil et al. therefore do not correspond to the claimed anisotropic portions. The assertion that optical sharing occurs within the optical boundaries of the segments in Corbeil et al. to the same extent as it occurs in the instant application is not correct since the micro-voids of Corbeil et al. are isotropic and do not correspond to the claimed anisotropic portions.

Further, Corbeil et al. state in paragraph [0038] that the teachings are directed at forming micro-voids within a scintillation material in order to form optically – segmented virtual resolution elements with characteristics similar to detector arrays fabricated using the methods of the prior art. In contradistinction, the claimed structure more accurately preserves spatial information to allow more reliable centroid determination than presently achievable when using known centroid determination techniques.

Mir et al. and Borrelli et al. each teach only forming a waveguide in which substantially the entire volume of the waveguide consists of a laser modified region. The

claimed invention is directed to optical sharing among a plurality of regions having borders defined by a plurality of laser modified discrete locations within a scintillator element. Corbeil et al. alone or in combination with Mir et al. and Borrelli et al. neither teach or suggest optical sharing among a plurality of regions having borders defined by a plurality of laser modified discrete locations within a scintillator element.

Waveguides are well known in the art. The claimed invention is not a waveguide, but instead is a scintillator that does not act as a waveguide. The claimed invention relies on optical sharing among a plurality of regions having anisotropic borders defined by a plurality of laser modified discrete locations within a scintillator element, a feature neither disclosed nor suggested by Corbeil et al. alone or in combination with Mir et al. and Borrelli et al.

In view of the foregoing, there is no good reason why a person skilled in the art would be motivated to modify the invention of Corbeil et al. in view of Mir et al. and Borrelli et al. by allowing optical sharing between different laser modified regions, as recited in claim 26 without improperly using the claimed invention as a template. The rejection on page 3 improperly relies on paragraph [0017] of applicant's specification as a reason for obviating patentability, since paragraph [0017] discloses that anisotropic properties can be changed or that micro-voids can be made. The claimed invention however, claims only anisotropic properties and does not claim micro-voids that are inherently isotropic. There is simply no justification for replacing the micro-voids disclosed by Corbeil et al. with anisotropic portions without such improper reliance on applicant's specification as a template for such replacement.

For at least these reasons, claim 26 is patentable over Corbeil et al. alone or in combination with Mir et al. and Borrelli et al. Claims 27-31 are patentable over Corbeil et al. alone or in combination with Mir et al. and Borrelli et al. through their dependency from claim 26 that is allowable. Applicant does not concede the correctness of the rejection or the relevance of the cited art as to the remaining claim features.

Favorable reconsideration in the form of a Notice of Allowance is requested. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at (507) 351-4450.

Respectfully submitted,

/Dwight N. Holmbo/
Dwight N. Holmbo
Registration No. 36,410
Tel. No. (507) 351-4450
August 21, 2009